

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/038250

International filing date (day/month/year)
10.11.2004

Priority date (day/month/year)
10.11.2003

International Patent Classification (IPC) or both national classification and IPC
F16C33/78, F16J15/34

Applicant
THE TIMKEN COMPANY

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - Gitschiner Str. 103
D-10958 Berlin
Tel. +49 30 25901 - 0
Fax: +49 30 25901 - 840

Authorized Officer

Telephone No. +49 30 25901-

Action: Reply to Written Opinion
Due Date: 9/10/05
Deputy Entry Clerk: [Signature]
Deputy Clerk: [Signature]
Reviewed by: [Signature]

10/577195

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**International application No.
PCT/US2004/038250

APPROVED FOR 26 APR 2006

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/038250

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	4,9,12-16,22,23,25
	No: Claims	1-3,5-8,10,11,17-21,24,26-29
Inventive step (IS)	Yes: Claims	12-15,22,23
	No: Claims	1-11,16-21,24-29
Industrial applicability (IA)	Yes: Claims	1-29
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V.

1 Reference is made to the following documents:

D1 : US 4 167 297 A (CHEESMAN ET AL) 11 September 1979 (1979-09-11)

D2 : EP 0 677 673 A (SNR ROULEMENTS) 18 October 1995 (1995-10-18)

D3 : US 2 647 025 A (DEFFENBAUGH JOHN L) 28 July 1953 (1953-07-28)

D4 : US 3 201 134 A (HAYATIAN ALLAN A) 17 August 1965 (1965-08-17)

2 INDEPENDENT CLAIM 1

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parentheses applying to this document):

an assembly for accommodating rotation about an axis (see fig.1), said assembly comprising: a first member (10); a second member (F); a bearing located between the first and second members (10,F) and having an inner race (12) fitted to the first member (10) and provided with a raceway (12b) that is presented away from the axis, an outer race (22) that is fitted to the second member (F) and is provided with a raceway (22b) that is presented toward the axis and the raceway (12b) of the inner race (12), and rolling elements (24) located between and contacting the raceways (12b,22b) of the inner and outer races (12,22); a seal (S) for isolating the interior of the bearing from external contaminants and including a first wear ring (30d), a second wear ring (30c), a backing element (30b,30a) urging one of the wear rings (30d,30c) toward the other wear ring (30d,30c), at least one of the wear rings (30d) being carried by one of the races (22,26).

The subject-matter of claim 1 is therefore not new.

2.2 Also documents D2 and D3 disclose the subject-matter of claim 1.

3 INDEPENDENT CLAIM 18

- 3.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 18 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parentheses applying to this document):

a bearing assembly for facilitating rotation about an axis (see fig. 1), said bearing assembly comprising: an inner race (12) having a raceway (12b) that is presented outwardly away from the axis; an outer race (22) having a raceway (22b) that is presented inwardly toward the axis and toward the raceway (12b) on the inner race (12), rolling elements (24) located between and contacting inner and outer raceways (12b, 22b); an extension (26) joined (column 5, lines 22-25) to the outer race (22) and projecting axially beyond the raceway (22b) of the outer race (22), a first wear ring (30d) having a wear surface located at an angle with respect to the axis; a first backing element (30b) supporting the first wear ring (30d) on the extension (26) and urging the first wear ring (30d) away from the extension (26); a second wear ring (30c) having a wear surface located at a steep angle with respect to the axis and contacting the wear surface of the first wear ring (30d); a second backing element (30a) supporting the second wear ring (30c); the two wear rings (30d, 30c) being biased toward each other.

The subject-matter of claim 18 is therefore not new.

- 3.2 Also documents D2 and D3 disclose the subject-matter of claim 18.

4 INDEPENDENT CLAIM 26

- 4.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 26 is not new in the sense of Article 33(2) PCT.

Document D4 discloses (the references in parentheses applying to this document):

a seal (see fig. 2-4) for establishing a fluid barrier around an axis of rotation, said seal comprising: a first wear ring (61) having a wear surface (69) that lies at

an angle with respect to the axis; a second wear (61a) ring located adjacent to the first wear ring (61) and having a wear surface (69) that is against the wear surface (69) of the first wear ring (61); a first backing element (62) for urging the first wear ring (61) toward the second wear ring (61a), the first backing element (62) being formed from a polymer (column 4, line 38: "rubber") and including, a base (73) located remote from the first wear ring (61), a floating segment (74) attached to the first wear ring (61), and a resilient connecting segment (71) extending between and attached to the base (73) and floating segments (74); a second backing element (62a) for urging the second wear ring (61a) toward the first wear ring (61), the second backing element (62a) being formed from a polymer and including a base located remote from the second wear ring, a floating segment attached to the second wear ring, and a resilient connecting segment extending between and attached to the base and floating element.

The subject-matter of claim 26 is therefore not new.

5 DEPENDENT CLAIMS 2-11, 16, 17, 19-21, 24, 25, 27-29

Dependent claims 2-11, 16, 17, 19-21, 24, 25, 27-29 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT) for the following reasons:

- 5.1 Document D1 further discloses the subject-matter of claims 2, 6-8, 10, 17, 19-21, 24.
- 5.2 Document D2 further discloses the subject-matter of claims 2, 3, 8, 11, 19, 20.
- 5.3 Document D3 further discloses the subject-matter of claims 2, 5, 19.
- 5.4 Document D4 further discloses the subject-matter of claims 27-29.
- 5.5 In claims 4, 9, 16 and 25 slight constructional changes in the bearing assemblies of D1-D3 are defined which comes within the scope of the customary practice followed by persons skilled in the art. Consequently, the subject-matter of claims 4, 9, 16 and

25 appears to lack an inventive step.

6 DEPENDENT CLAIMS 12-15, 22,23

The subject-matter of dependent claims 12-15, 22 and 23 defines novel combinations of subject-matter, each part however being separately known by different prior art disclosures (document D1+D4 or D3+D4). Although these combinations are novel with respect to the available prior art, it is not apparent to the skilled person what inventive technical effects the specific combinations of subject-matter produces. Should the applicant regard this subject-matter as involving an inventive step, a new independent claim should be drafted to include these features, bearing in mind that the features known from document D1 should be placed in the preamble of such a claim in accordance with Rule 6.3(b) PCT. The applicant should also indicate in the letter of reply the difference, in terms of technical features, between the subject-matter of the new claim vis-à-vis the state of the art, the technical effect caused by this difference and the technical problem solved by this effect. The applicant is emphasized to draft new claims having unity of invention (Rule 13 PCT) in mind, i.e. draft claims such that the novel features of each independent claim are so linked as to form a single general inventive concept.